**Project Outline: Biokinetics Spring 2012**

**3/2/2012**

**Working in groups of two:**

Your task will be to formulate a recipe that consists of materials that are characteristic of the beer style that you will be given, accounts for the water profile of a given region and includes the use of an adjunct. Using the recipe you design you will then apply the calculations you have learned in class to estimate how much material will be required to produce 1000 barrels of post fermented beer. Groups will write a 3-5 page report (single or double spaced) and present for 8-10 minutes on their findings.

**Three Constraints:**

1. **Beer Style**
2. **Water profile – determined by region**
3. **An adjunct must be used**

**Directions for www.gemstat.org:**

1. **Water Reports:** [**www.gemstat.org**](http://www.gemstat.org)
2. **Find Continent/Country/Location**
3. **Choose appropriate ions, alkalinity, etc**
4. **View Summary Data**
5. **Use the mean value for each parameter (Units are listed next to parameter)**

**Grading Details:**

**Written Report –** Complete project. Justifications, assumptions made, reasoning for decisions made, work done out for all calculations (show units too). All sources of information, references.

**Presentation –** 8-10 minutes, should summarize written report. 5 minute Q/A session. Should include things like: history, ingredients chosen, water report for region, expected tastes, assumptions made, etc. Should not include things like: done out work to show how you arrived to any particular number.

**Grading will be based on:**

Beer style description/history

Match between beer style and recipe

Correct Calculations

Adjunct Considerations

Quality of presentation and written report

Student participation during presentations

Sources – Legitimate vs. Rando.

**Criteria to Consider:**

**Beer Style:**

History

Where did the particular style originate

World events also occurring

Etc.

Characteristic Ingredients

Grains

Target Gravities (pre and post fermentation)

Hops

IBU's/Bitterness

Yeast

Alcohol Levels

Grist Ratios

Mash Temperatures, Times, pH

Regional water profile from where that style originated

Fermentation times and temperatures

Etc.

**Recipe Formulation:**

Ingredients chosen

Grains

Hops

Adjunct(s)

Yeast

Water Treatment

Salt additions

Target pH?

Adjunct(s)

Associated processing requirements

How adjunct will contribute to fermentable material in grain

Expected flavor and color profile (QUALITATIVE)

Hop/grain/yeast contributions

**Calculations to Consider:**

Water consumption (only associated with brewing process)

Mash water

Sparge water

Boiling evaporation losses

Dead volume

Mass of grain needed

Malt analysis sheets

Various efficiencies (and their effect on total grain required)

Hops require

IBUs

Utilization

Alcohol Content

Quantities of Salts needed for brew

Water Reports: [www.gemstat.org](http://www.gemstat.org)

Use Dissolved concentrations (instead of total)

**Water Locations:**

Oceania (Australia) - Lake Burragorang

Norway – Lake Totak - Telemark

Ecuador - Daule River